

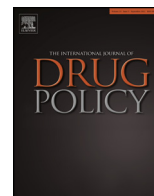


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Research paper

The availability and depiction of synthetic cathinones (bath salts) on the Internet: Do online suppliers employ features to maximize purchases?

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ABSTRACT

Background: “Bath salts”, a derivative of cathinone, a naturally occurring beta-ketone amphetamine analogue found in the leaves of the khat (*Catha edulis*) plant, is a potent class of designer drugs associated with significant medical and psychiatric consequences. They are commonly used among 20–29 year olds, a group with easy access to the Internet and an inclination to purchase online. Therefore, the Internet has the potential to play a significant role in the distribution and associated consequences of these “legal highs”.

Methods: Google searches were used to determine bath salts availability on retail websites and how different search terms affected the proportion of retail websites obtained. Retail websites were reviewed by two independent raters who examined content with a focus on characteristics that increase the likelihood of online sales.

Results: Of the 250 websites found, 31 were *unique* retail websites. Most retail website hits resulted when a product name was used as the search term. The top three countries hosting retail websites were registered in the United States ($n = 14$; 45%), Germany ($n = 7$; 23%), and the United Kingdom ($n = 3$; 10%). These online drug suppliers provided considerable information and purchasing choice about a variety of synthetic cathinones, legitimized their sites by using recognizable images, online chat features, and mainstream payment and shipping methods, and employed characteristics that promote online purchases.

Conclusion: Online designer drug suppliers use sophisticated methods to market unregulated products to consumers. The international community has taken diverse approaches to address designer drugs: legislative bans, harm reduction approaches, an interim regulated legal market. Multifaceted efforts that target bath salt users, suppliers, and emergency/poison control entities are critical to comprehensively address bath salt ingestion and its consequences.

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Introduction

Synthetic or designer drugs are chemically derived, laboratory produced substances that are designed to mimic the intoxicating effects of other commonly abused illegal drugs. These drugs have penetrated the international community reaching over 70 countries and territories (United Nations Office on Drugs and Crime (UNODC), 2013). One such drug is a derivative of cathinone (with a street name “bath salts”), a naturally occurring beta-ketone

amphetamine analogue found in the leaves of the khat (*Catha edulis*) plant (Prosser & Nelson, 2012). Marketed under a variety of individual brand names (e.g., Ivory Wave, Cloud 9, Vanilla Sky), this category of cathinone-based designer drugs (i.e., will be referred to as bath salts throughout the remainder of the paper) is promoted as a legal high that can provide users with the hallucinogenic and euphoric effects found in methamphetamine and ecstasy (Olives, Orozco, & Stellpflug, 2012; Slomski, 2012). Bath salts can be snorted, injected, and swallowed with intoxication resulting in serious acute and chronic medical and psychiatric conditions including recurrent acute kidney injury (Adebamiro & Perazella, 2012), intense psychosis/delirium (Kasick, McKnight, & Klisovic, 2012; McClean, Anspikian, & Tsuang, 2012; Stoica & Felthous, 2013), and

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overdose and death (Karila & Reynaud, 2011; Murray, Murphy, & Beuhler, 2012; Wood & Dargan, 2012). Additional side effects that are frequently reported by US poison centers include paranoia and violent behavior, hallucinations, delusions, suicidal thoughts, seizures, panic attacks, increased blood pressure and heart rate, chest pain, nausea, and vomiting. Considering how often the components of synthetic drugs tend to change, users typically have no idea what they are actually ingesting, making the risk associated with use even higher (Davies et al., 2010). For example, while bath salts typically include 3, 4-methylenedioxypropylvalerone (MDPV) and 4-methylmethcathinone (mephedrone), they can also include butylone, dimethylcathinone, ethcathinone, ethylone, 3- and 4-fluoromethcathinone, methedrone, and provalerone (Prosser & Nelson, 2012).

Bath salt availability in retail establishments such as adult stores, convenience stores, gas stations, head shops, and skateboard shops is complemented by international Internet availability (U.S. Department of Justice National Drug Intelligence Center, 2011; Wilkins, 2014a). Over the past ten years, the Internet has emerged as a market for purchasing prescription and non-designer illegal drugs (Curtis et al., 2014; Forman, 2003; Orizio, Merla, Schulz, & Gelatti, 2011) and there is now evidence that the Internet plays a major role in the distribution of designer drugs (Bruno, Poesiat, & Matthews, 2013; Corazza et al., 2012; European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), 2012; INCB, 2013). While there is currently limited but importantly growing research on the type of websites used to sell designer drugs (see Bruno et al., 2013; Corazza et al., 2012, 2014 for seminal work on this topic), research related to online purchases in general suggest that characteristics of websites can actually legitimize a website's presence and promote sales. For example, it has been reported that the likelihood of online purchases increases when websites: (1) are readily accessible and easy to use; (2) are informative about their products; (3) promote trustworthiness and legitimacy through testimonials and other postings that appear legitimate (e.g., logos); (4) imply positive experiences leading to decreased perception for harm; and (5) promise security (CASA (National Center on Addiction and Substance Abuse), 2006; Keen, Ballance, Chan, & Schrupp, 1999; Tan & Thoen, 2001, 2002; Van der Heijden, Verhagen, & Creemers, 2003; Venkatesh & Davis, 2000). Knowing that emerging adults have easy access to the Internet (Fox, 2014; Haste, 2005), an inclination to purchase online (Jansen, 2010), and an interest in avoiding positive drug tests through ingestion of ever-changing synthetic compounds (Perrone, Helgesen, & Fischer, 2013), the Internet has the potential to play a significant role in the distribution of these "legal highs" and in their associated medical and psychiatric consequences. Consequently, we examined: (1) the availability of bath salts on the Internet through retail websites; (2) how different search terms affected the proportion of retail websites obtained; and (3) the content of online retail sites with a specific focus on those characteristics that are reported to increase the likelihood of online sales. We discuss approaches undertaken by various countries to address this and suggest approaches that could augment this work.

Methods

Google is the most used search engine accounting for over 80% of web searches (Purcell, Brenner, & Rainie, 2012). In September 2013, Google was used in searches to determine: (1) the number of websites selling bath salts and (2) the content and marketing strategies employed by the websites. Five search terms were used: the generic search term "bath salts" followed by the brand name searches of Ivory Wave, Cloud 9, Vanilla Sky, and Lunar Wave. The first fifty sites per search were reviewed given: (1) close to 80% of

Table 1
Type of website by search term used.

| Search term | Type of website | | | |
|-------------|-----------------|--------|-------------|-------|
| | Retail | Portal | Information | Other |
| Bath salts | 9 | 2 | 19 | 21 |
| Ivory Wave | 18 | 3 | 19 | 10 |
| Cloud 9 | 1 | 2 | 38 | 8 |
| Vanilla Sky | 13 | 0 | 22 | 14 |
| Lunar Wave | 18 | 2 | 20 | 11 |
| Total | 59 | 9 | 118 | 64 |

users do not go beyond the first 20 links in searches (Jansen, Spink, & Pedersen, 2005; Jansen, Spink, & Saracevic, 2000) and (2) a preliminary scan showed that anything past the first fifty search results predominantly contained advertisements or spam which did not meet the goals of the project. These criteria (i.e., first fifty results for each of five search terms) resulted in a total of 250 website links for review.

To identify website type, websites were categorized as retail, portal, information, or other. "Retail" websites offered to directly sell bath salts to consumers and "portal" websites linked to retail sites. "Information" websites provided communication venues for sharing information: forums (e.g., comment-based discussions), news articles, blog posts (e.g., individual posts on topics), and social media links (e.g., Facebook page for Bath Salt shops). The "other" category included websites that fell outside of the three primary categories (e.g., information on the movie Vanilla Sky, sites selling actual, non-drug bath salts to be used for bathing, links to sites that were no longer active).

All unique retail websites were reviewed to determine the site's functionality and ease of use (e.g., ability to search by product name or price range, whether it could be accessed on mobile devices), basic product-related information (e.g., legality and state residency, product ingredients, cost, outcome of using the product), and "marketing" techniques (e.g., specials such as buy one get one free, free shipping, anonymity packaging guarantees). A domain registry website (i.e., register.com) was utilized to determine the registration country for each retail website. Finally, to ensure that tabs and other website features were functional, we went through all the stages of completing an order, but cancelled the order at the final stage.

Two independent raters reviewed each of the 250 websites and independently coded category and content data for reliability and validity purposes. Inter-rater reliability as measured by percent exact agreement for type of website was 100%. Inter-rater reliability as measured by percent exact agreement for website content across all websites initially ranged from 69% exact agreement (e.g., whether there was information suggesting the sites were secure) to 100% exact agreement (e.g., whether the site offered free samples, buy one get one free specials). When there were discrepancies in coded responses, coders discussed the item and came to a resolution in all cases. (Note: If there would have been discrepancies that could not have been resolved between the independent coders, the senior author would have made the final coding decision.) This procedure resulted in a final data set with 100% agreement.

Results

Of the 250 websites reviewed, 59 were retail websites, 9 portal websites, 118 information websites, and 63 were other types of websites. As illustrated in Table 1, most retail website hits resulted when a specific product name (e.g., Ivory Wave versus bath salts) was used as the search term. Of the 59 retail websites, nearly half ($n=28$ or 47%) were available under multiple search

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